

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of

Unlicensed Operation in the TV Broadcast Bands

ET Docket No. 04-186

**COMMENTS OF ATHEROS COMMUNICATIONS, INC., BROADCOM CORP.,
DELL INC., HEWLETT-PACKARD CO., MARVELL SEMICONDUCTOR, INC.,
MICROSOFT CORP., MOTOROLA, INC., NOKIA INC.,
PHILIPS ELECTRONICS NORTH AMERICA CORP., AND
THE WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION (“WISPA”)**

The undersigned device manufacturers and white spaces supporters submit these Comments pursuant to the Federal Communications Commission’s (“Commission’s” or “FCC’s”) Public Notice soliciting proposals from entities seeking to be designated TV band database managers to express a common set of views regarding the TV white space (TVWS) database selection process.¹ The companies and organizations supporting this filing include Atheros Communications, Inc., Broadcom Corp., Dell Inc., Hewlett-Packard Co., Marvell Semiconductor, Inc., Microsoft Corp., Motorola, Inc., Nokia Inc., Philips Electronics North America Corp., and the Wireless Internet Service Providers Association (“WISPA”), and represent some of the largest TVWS supporters and manufacturers (together, the “TVWS Group”). As potential TVWS database users, the group felt the strong need to clearly express its views to the Commission. The TVWS Group supports the efficient and fair use of TV white

¹ Office of Engineering and Technology Invites Proposals from Entities Seeking to be Designated TV Band Device Database Managers, ET Docket No. 04-186, Public Notice, DA 09-2479 (rel. Nov. 25, 2009).

spaces, and strongly encourages the FCC to authorize multiple database providers in a timely process.

The TVWS Group urges the FCC to authorize multiple TVWS database vendors in order to encourage a high level of competition, innovation, and reliability in database services. The existence of multiple database providers will spur competition and innovation in the rapidly developing field of database services, allowing consumers to enjoy continually improving services at the lowest possible market-determined prices. The TVWS Group would like the FCC to allow for a high level of flexibility in both database provider business models and architectures so as not to unnecessarily limit innovation in this developing field.² In order to ensure that competition remains vibrant, the FCC should allow for authorization of new database providers over time, especially if the number of providers is reduced to a small number due to market or other forces.

The TVWS Group is pleased to see that all nine database applicants indicated that they could perform the complete database functions in an end-to-end manner (including all required synchronization functions between databases), and encourages the Commission to support a healthy and competitive eco-system of multiple *independent* database vendors. The TVWS Group would like to avoid any situations where there is a single choke-point (*i.e.*, a sole database provider, a sole data repository, or a sole clearinghouse) anywhere in the overall database system/architecture, since such a situation runs counter to free and open-market competition for services, and would ultimately harm consumers. A solution with multiple independent database

² Innovation could occur in many forms in database services; it could be in the speed that results are computed, the breadth of results that are provided during a query, or in the enhanced database services that are provided (*e.g.*, interference estimation per location, additional available non-TV band spectrum identification, etc.).

providers will result in the highest overall TVWS system reliability, which is critical as millions of TVWS devices are deployed.³

The TVWS Group notes that a small number of the database applicants have shown some potential interest in partnering to establish clearinghouse services in order to realize additional operational efficiencies. The TVWS Group is not opposed to market-driven clearinghouse partnership approaches so long as they do not hinder efficient pricing, reliability or innovation, and they allow additional stand-alone TVWS databases and clearinghouses to operate in the system through synchronization interfaces.⁴ Exclusive control of any database functions by any party or entity should not be permitted.

Incumbent protection can be achieved with multiple databases, and the databases will be able to successfully synchronize protected entity information. There are numerous examples in the field of databases that successfully synchronize critical information on a real-time basis (*e.g.*, financial trading systems, ATM/banking networks). In order to assure that a single TVWS database provider cannot hold up system deployment or operation, the TVWS Group recommends that all TVWS database providers be required to fully implement all inter-database synchronization tasks with open, published, and non-proprietary APIs (*e.g.*, for sharing all required registration data as described in Section 15.713(b)(2) of the rules) before being allowed

³ Even popular internet services with multiple servers occasionally suffer service outages on the order of several hours (*e.g.*, see http://www.cio.com/article/482068/Gmail_Struck_with_Service_Outage). The outage of a sole-provider anywhere in the overall database system would, after a period of time, render *inoperable all white space devices in the system*. This could have catastrophic consequences as millions of devices deployed in a wide variety of applications could be forced to shut down (*e.g.*, consider the vast range of wifi applications used by businesses, hospitals, and consumers today, not to mention the additional applications of wide area TVWS networks).

⁴ Inter-database clearinghouse synchronization functions were described by all parties (*i.e.*, Comsearch, Google, and Neustar) that proposed the function.

to enter operation. The TVWS Group also recommends that all database providers adopt openly published and non-proprietary APIs for TVWS device interfaces to the database.⁵

The TVWS Group believes that the FCC should allow for reasonable and evolving security means for TVWS databases and devices that follow industry standard mechanisms. For example, digital certificates could be utilized to authenticate database providers, and shared secret methods could be utilized to help authenticate the business relationship with devices. These same methods successfully support trillions of dollars of online commerce, financial banking and trading activities. The TVWS Group does not believe that FCC equipment authorization checking is a necessary or effective TVWS database enforcement function. The TVWS Group believes that the protection of confidential consumer and registered protected entity information is imperative and supports working with the Commission, industry members and advocates on developing approaches for the retention and protection of collected information.

⁵ Since the TVWS device-to-database interface is relatively simple with few fields exchanged, the TVWS Group expects the interface implementations to be straightforward. Eventually, the TVWS Group would expect the industry to standardize on common open interfaces.

In summary, the TVWS Group agrees with several database applicants that wish to “Ensure a healthy and competitive eco-system of multiple White Spaces databases, to promote reliability, innovation and competition in basic and enhanced database services” and that the Commission should endorse a “...market-driven approach, one that avoids either limiting the number of providers or mandating a single database architecture”.^{6,7}

Respectfully submitted,

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⁶ See Spectrum Bridge response to PN DA-09-2479, filed Jan. 4th, 2010.

⁷ See Google response to PN DA-09-2479, filed Jan. 4th, 2010; see also Letter from Richard S. Whitt, Google Inc., to Marlene H. Dortch, FCC, ET Docket No. 04-186, slide 19, filed Oct. 28, 2008.

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